

### DETAILED ACTION

1. Applicant's amendments filed October 8, 2009 are acknowledged. Claims 2 and 3 have been canceled. Claims 1 and 4-12 are pending, and claims 7-12 are withdrawn.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by European Patent Application Publication No. 1336436 to Sugimoto in view of U.S. Patent No. 5,353,821 to Franklin in view of U.S. Patent No. 2003/0205246 by Christman et al. (hereafter referred to as "Christman").

6. With regard to claim 1, Sugimoto teaches a method for cleaning a drainage pipe in a transit vehicle (Par. 0001; Par. 0002; Par. 0007; Par. 0008; Figure 1). In Sugimoto's method, a cleaning liquid reservoir (reads on *cleaning fluid tank*) is connected to the downstream end of a drainage pipe through a feed pipe (reads on *fluid delivery line*), and the cleaning liquid reservoir is connected to the upstream end of the drainage pipe through a suction pipe (reads on *fluid drain line*; Par. 0007 Par. 0008; Par. 0035). Negative pressure is applied to the cleaning liquid reservoir, feed pipe, drainage pipe, and suction pipe (Par. 0008; Par. 0035; Figure 1), and cleaning liquid from the cleaning liquid reservoir is reverse-flushed through the drainage pipe after passing through feed pipe. The used cleaning liquid is returned to the cleaning liquid reservoir through the suction pipe (Par. 0008). Sugimoto teaches monitoring the cleaning fluid pressure near the drainage pipe during the cleaning process, and Sugimoto teaches initiating a cleaning liquid recovery cycle when the pressure detector (item 41 in Figure 1) near the drainage pipe detects an excessive pressure (Par. 0034;

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Par. 0057). In the recovery cycle, the supply of cleaning liquid to the drainage pipe is stopped, and a valve on the suction pipe is opened in order to expose the cleaning liquid in the drainage pipe to the pressure of the atmosphere such that cleaning fluid is recovered by the cleaning fluid tank (Par. 0011; Par. 0012; Par. 0034; Par. 0057; Par. 0058). As discussed, Sugimoto teaches performing a fluid recovery cycle when a pressure sensor detects that the pressure of fluid near the drainpipe is too large (Par. 0034; Par. 0057).

7. Sugimoto does not explicitly teach that the cleaning process is resumed after the fluid recovery process is performed.

8. Franklin teaches a method of cleaning a drainpipe with aqueous cleaning solution (Col. 1, 9-20; Col. 2, 9-16; Col. 3, line 61 to Col. 4, line 2; Col. 4, 10-19; Col. 5, 19-30). Franklin teaches monitoring the cleaning apparatus, and as taught by Franklin, when an undesired deviation occurs in the cleaning fluid delivery process, the process is temporarily stopped such that the problem can be corrected (Col. 5, line 63 to Col. 6, line 17). Upon performing the correction process, Franklin teaches resuming the cleaning process in order to continue cleaning the drainpipe (Col. 6, 13-17).

9. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Sugimoto such that the cleaning process is resumed after the cleaning recovery process has been performed. The motivation for performing the modification was provided by Franklin, who taught resuming a cleaning process after correcting a system malfunction in order to continue the cleaning process, and in

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the method of Franklin, it would be desirable to continue cleaning the drainpipe in order to fully clean the drainpipe.

10. The combination of Sugimoto in view of Franklin does not teach terminating operation of the cleaning system after more than a predetermined number of cleaning fluid recovery cycles have been performed.

11. Christman teaches a method of pumping cleaning liquid in an enclosed space in order to clean surfaces within the enclosed space (Par. 0008; Par. 0009; Par. 0036; Par. 0040). Christman teaches performing a drain cycle when a pressure sensor within the enclosed space detects that too much cleaning liquid is present with the space (Par. 0079; Par. 0083), and Christman teaches counting the number of times that the drain cycle is performed (Par. 0084). As taught by Christman, if the number of times the drain cycle is performed exceeds a predetermined value, it is determined that something is systematically wrong with the apparatus, and the functioning of the apparatus is terminated (Par. 0084; Par. 0085).

12. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Sugimoto in view of Franklin such that the number of times that the fluid recovery cycle is performed during the continued cleaning process is counted such that when the number of iterations exceeds a predetermined value, the functioning of the cleaning apparatus can be terminated (MPEP 2143, *Rational A*). The motivation for performing the modification was provided by Christman, who taught such a practice allows for the termination of a cleaning apparatus when a systematic problem is likely occurring.

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13. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application Publication No. 1336436 to Sugimoto in view of U.S. Patent No. 5,353,821 to Franklin in view of U.S. Patent No. 2003/0205246 by Christman as applied to claim 1 and in further view of U.S. Patent No. 5,895,763 to Edstrand et al. (hereafter referred to as "Edstrand").

14. With regard to claim 4, the combination of Sugimoto in view of Franklin in view of Christman teaches using flow meters to monitor the flow rate of cleaning liquid through the feed pipe (Par. 0030 of Sugimoto). The combination teaches that the cleaning of the drainage pipe generates gases (Par. 0027 of Sugimoto).

15. The combination of Sugimoto in view of Franklin in view of Christman does not explicitly teach using the flow meter data to determine the end point of the cleaning process.

16. Edstrand teaches a method of cleaning a pipe that involves flowing cleaning liquid through the pipe (Col. 3, 3-9). The cleaning liquid reacts with the contaminants within the pipe to form gases (Col. 3, 16-18). Flow rate sensors are placed at the inlet and outlet of the pipe (Col. 3, 3-30). Initially, the formed gases cause the pressure at the outlet to be greater than the pressure at the inlet, but after treating the pipe for some amount of time, the two flow rates equalize at a flow rate value, indicating that the gas-forming contaminants have been removed (Col. 3, 3-30). Edstrand teaches terminating the cleaning process when it has been determined that the gas-forming contaminants have been removed (Col. 3, 24-30).

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17. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Sugimoto in view of Franklin in view of Christman such that flow rate sensors monitor the fluid flow rate at the feed pipe near the inlet of the drainage pipe and at the suction pipe near the outlet of the drainage pipe. When there are no longer gases generated by the reaction between the contaminants in the drainage pipe and the cleaning liquid, the flow rate reading at the inlet end of the drainage pipe and the flow rate reading at the outlet end of the drainage pipe would reach an equal flow rate value (reads on *predetermined flow rate*), and the equalization of the two flow rate readings would indicate that the gas-forming contaminants are removed. In this modified method, when it is known that the gas-forming contaminants have been removed, the user would terminate the process. The motivation for performing the modification was provided by Edstrand, who taught that the flow rate monitoring process could be used to determine when gas-generating contaminants have been removed from a pipe.

18. With regard to claims 5 and 6, the combination of Sugimoto in view of Franklin in view of Christman in view of Edstrand, as develop thus far, does not teach waiting for a predetermined amount of time to pass before terminating the cleaning process after the fluid flow through the delivery line has reached the equalized flow rate.

19. Sugimoto teaches timing the cleaning process such that the cleaning process is terminated after a predetermined amount of time has elapsed since the beginning of the cleaning process (Par. 0055; Par. 0056). As taught by Sugimoto, waiting for the

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appropriate amount of time to pass during the cleaning process ensures that scale is completely removed from the drainage pipe (Par. 0056).

20. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Sugimoto in view of Franklin in view of Christman in view of Edstrand such that upon having the flow rate of the cleaning liquid reach the equalized flow rate value, the cleaning process is continued until the necessary predetermined amount of time has elapsed since the beginning of the cleaning process. The motivation for performing the modification was provided by Sugimoto, who taught that performing the cleaning process for the necessary predetermined amount of time since the beginning the cleaning process ensures that the undesired scale is completely removed.

### ***Response to Arguments***

21. Applicant's arguments filed October 8, 2009 have been fully considered but they are not persuasive.

22. Applicant argues against applying the Sugimoto reference by arguing that since Sugimoto does not explicitly teach stopping the feed pump (item 32 in Sugimoto's Figure 1) when the detected pressure at the drainage pipe (item 91) is too high, Sugimoto doesn't teach *stopping supply of cleaning fluid to the drainpipe*. However, when the detected pressure at the drainage pipe is too high, Sugimoto does teach opening the emergency feed-back valve (item 45) and opening the outside air introduction valve means (item 61) such that the air at atmospheric pressure can enter

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the drainage pipe. As a result of these steps, Sugimoto teaches that "the cleaning liquid L is prevented from flowing into the drainage pipe 91 to prevent the inner pressure of the drainage pipe 91 from increasing to a high level" (Par 0057). Therefore, Sugimoto clearly teaches *stopping supply of cleaning fluid too the drainpipe*.

23. Applicant also argues that in the presented prior art, the pressure inside the drainage pipe is not reduced "quickly". However, the presented obviousness rejections teach all the method steps claimed by applicant, and since applicant doesn't actually claim any limitations regarding how "quickly" the process is performed, this argument is not convincing.

### **Conclusion**

24. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

25. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN COLEMAN whose telephone number is (571)270-7376. The examiner can normally be reached on Monday-Friday, 9-5.

27. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

28. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RLC/

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January 14, 2010

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Application/Control Number: 10/567,014  
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